	DEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit **Hotline - 1-877-5PERMIT**	**PERMIT TO CONSTRUCT APPLICATION** Revision 2 2/14/2007

Company Name:	Glanbia Foods, Inc.
Facility Name:	Glanbia Gooding
Facility ID No.:	047-00008
Brief Project Description:	Lactose Line Equipment Upgrade and New WPC Bagging Line

Please see instructions on next page before filling out the form.

POINT SOURCE STACK PARAMETERS

1.	2.	3a.	3b.	4.	5.	6.	.7	8.	9.	10.
Emissions units	**Stack ID**	**UTM Easting (m)**	**UTM Northing (m)**	**Base Elevation (m)**	**Stack Height (m)**	**Modeled Diameter (m)**	**Stack Exit Temperature (K)**	**Stack Exit Flowrate (acfm)**	**Stack Exit Velocity (m/s)**	**Stack orientation (e.g., horizontal, rain cap)**
Point Source(s)										
Primary Dryer Baghouse	PDRYBH	#########	#########	1,106.61	27.13	0.86	369.26	18,752.50	15.10	Vertical
Fluidized Bed Baghouse	FBEDBH	#########	#########	1,106.56	27.13	0.76	345.93	13,942.70	14.40	Vertical
Mill Receiving Baghouse	MRECBH	#########	#########	1,106.56	14.63	0.15	308.15	440.00	0.00	Horizontal
Powder Bin Baghouse	PBINBH	#########	#########	1,106.53	26.82	0.20	308.15	909.50	13.20	Vertical
lactose Surge Hopper Baghouse	LACHOPBH	#########	#########	1,106.51	13.11	0.15	308.15	440.00	0.00	Horizontal
WPC Surge Hopper Baghouse	WPCSRGBH	#########	#########	1,106.42	8.53	0.20	295.37	772.74	0.00	Horizontal
WPC Nuisance Baghouse	WPCNUSBH	#########	#########	1,106.42	5.79	0.25	295.37	2,972.07	0.00	Horizontal
Boiler 1 (29.35 -NG)	BOILER1	#########	#########	1,106.46	9.45	0.61	449.82	8,000.00	12.90	Vertical
Boiler 2 (Dual 25.1) - NG	BOILER2	#########	#########	1,106.49	10.97	0.61	460.93	8,000.00	12.90	Vertical
Boiler 3 (Dual 25.1) - NG	BOILER3	#########	#########	1,106.61	10.97	0.61	460.93	8,000.00	12.90	Vertical
Boiler 4 (25.1) - NG	BOILER4	#########	#########	1,106.77	9.45	0.76	521.09	9,460.00	9.79	Vertical
Boiler 5 (Biogas)	BOILER5	#########	#########	1,107.64	6.40	0.61	435.93	8,262.10	13.36	Vertical
Flare	FLARE	#########	#########	1,107.48	4.88	0.20	1,033.15	838.60	12.20	Vertical
WPC Dryer	DRYER1	#########	#########	1,106.49	25.60	1.00	347.04	39,288.40	23.62	Vertical
Generator	GEN1	#########	#########	1,106.52	4.27	0.41	750.43	14,089.50	51.50	Vertical
Existing Lactose Baghouse	LACBAG	#########	#########	1,106.49	25.60	0.99	322.04	4,800.00	2.94	Vertical

	DEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit **Hotline - 1-877-5PERMIT**	**PERMIT TO CONSTRUCT APPLICATION** Revision 2 2/14/2007

Company Name:	
Facility Name:	
Facility ID No.:	
Brief Project Description:	

Please see instructions on next page before filling out the form.

FUGITIVE SOURCE PARAMETERS

1.	2.	3a.	3b.	4.	5.	6.	7.	8.	9.	10.
Emissions units	**Stack ID**	**UTM Easting (m)**	**UTM Northing (m)**	**Base Elevation (m)**	**Release Height (m)**	**Easterly Length (m)**	**Northerly Length (m)**	**Angle from North (°)**	**Initial Vertical Dimension (m)**	**Initial Horizontal Dimension (m)**
Area Source(s)										
Heaters (1, 2, and 3)	Heaters	693,090.00	##########	1,106.42	27.43				21.96	0.31
Volume Source(s)										

	DEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit **Hotline - 1-877-5PERMIT**	**PERMIT TO CONSTRUCT APPLICATION** Revision 2 2/14/2007
Company Name:	Glanbia Foods, Inc.	
Facility Name:	Glanbia Foods, Gooding Facility	
Facility ID No.:	047-00008	
Brief Project Description:	Lactose Line Equipment Upgrade and New WPC Bagging Line	

Please see instructions on next page before filling out the form.

BUILDING AND STRUCTURE INFORMATION

1.	2.	3.	4.	5.	6.	7.
Building ID Number	**Length (ft)**	**Width (ft)**	**Base Elevation (m)**	**Building Height (m)**	**Number of Tiers**	**Description/Comments**
Cheese and Whey Building	640.00	377.00	1106.42	39.02	2	Process building
Bioler Building	98.40	104.96	1106.50	7.92	1	
(insert more rows as needed)						

Instructions for Form MI4

Appendix C

Emissions Estimates

Table 1.0 Facility Wide PM Emissions			
Emissions Units	**PM[a] Emissions (lb/hr)**	**PM[a] Emissions (tpy)**	**Notes**
Boiler 1 (26.4 - NG)	0.19	0.83	Boiler replacement from 29.35 to 26.4 MMBtu/hr PTC exemption filed in 2006
Boiler 2 (Dual 25.1) - NG	0.18	0.69	
Boiler 2 (Dual 25.1) - Diesel	0.59	0.32	Emission factor corrected
Boiler 3 (Dual 25.1) - NG	0.18	0.69	
Boiler 3 (Dual 25.1) - Diesel	0.59	0.32	Emission factor corrected
Boiler 4 (25.1) - NG	0.18	0.79	
Boiler 5 (Biogas)	0.12	0.51	Boiler 5 operates on either Biogas or NG - Worse case emissions used for Biogas
Flare	0.09	0.37	
WPC Dryer	0.07	0.29	
Diesel Generator	0.57	0.06	
Heater 1 (1.5)	0.01	0.05	
Heater 2 (5.89)	0.04	0.19	
Heater 3 (1.374)	0.01	0.04	
Existing Lactose Receiving Baghouse (Bauermister)	0.76	3.34	No changes to baghouse
Permit Mod Changes Spring 2008			
Replace Lactose Scrubber	(5.05)	(22.09)	
New Lactose Primary Dryer	0.08	0.33	Replaces existing lactose scrubber
New Lactose Fluidized Bed Dryer	0.05	0.23	
New Lactose Mill Receiving Baghouse	0.08	0.33	
Lactose Powder Bins	1.15	5.04	1 New powder bin will be tied together with 2 existing powder bins and exit out 1 stack (previously vented inside)
Lactose Surge Hoppers	1.76	7.71	2 Existing surge hoppers will be tied together and exit out 1 stack (previously vented inside)
WPC Surge Hopper	0.03	0.13	
WPC Nuisance Baghouse	0.11	0.50	
Totals	**1.79**	**0.66**	

Notes:

[a] *PM is assumed to equal to particulate matter less than 10 microns in diameter (PM_{10})*

[b] *NA is not applicable*

Other facility-wide calculations included on EXCEL spreadsheet included with CD

Table 2.0 Lactose Line PM Emissions Net Increase								
Emissions Units	**Process Equipment**	**Date Installed**	**Maximum Dry Solids Output (lb/hr)**	**Dry Solids Increase Output (lb/hr)**	**Baghouse PM Fractional Efficiency[a]**	**PM[b] Emissions Net Increase (lb/hr)**	**PM[b] Emissions Net Increase (tpy)**	**Notes**
New Lactose Primary Dryer	Baghouse	2008	750	750	99.99	0.08	0.33	Replaces existing scrubber
New Lactose Fluidized Bed Dryer	Baghouse	2008	525	525	99.99	0.05	0.23	
New Lactose Mill Receiving Baghouse	Baghouse	2008	750	750	99.99	0.08	0.33	
Lactose Powder Bins	Baghouse	2008	11,500	11,500	99.99	1.15	5.04	1 New powder bin will be tied together with 2 existing powder bins and exit out 1 stack (previously vented inside)
Lactose Surge Hoppers	Baghouse	2008	17,600	17,600	99.99	1.76	7.71	2 Existing surge hoppers will be tied together and exit out 1 stack (previously vented inside)

Notes:

[a] *Efficiencies provided by bag supplier; Bay Area Industrial Filtration*

[b] *PM is assumed to equal to particulate matter less than 10 microns in diameter (PM_{10})*

Ex. Calc - New Lactose Primary Dryer: (750 lb/hr)*(1-99.99/100) = 0.08 lb/hr PM

Table 3.0 WPC Bagging Line PM Emissions Net Increase							
Emissions Units	**Process Equipment**	**Date Installed**	**Blower (cfm)**	**PM[a,b] Emissions Net Increase (lb/hr)**	**PM[a,b] Emissions Net Increase (tpy)**	**Manufacturer Grain Loading (grain/ft^3)**	**Process Weight - Dry Solids (lb/hr)**
WPC Surge Hopper	Baghouse	2008	780	0.03	0.13	0.0044	13,200
WPC Nuisance Baghouse	Baghouse	2008	3000	0.11	0.50	0.0044	10

Notes:

[a] *Manufacturer (Niro Inc.) supplied particulate loading value for WPC Baghouses*

[b] *PM is assumed to equal to particulate matter less than 10 microns in diameter (PM_{10})*

Ex. Calc - WPC Surge Hopper: (0.0044 grain/ft^3)*(780 cfm)*(1 lb/7000 grain)*(60 min/hr) = 0.03 lb/hr PM

Table 4.0
Glanbia Foods Inc., Gooding, Idaho
Process Weight Calculations

Compliance with IDAPA Rule 701 PM Standard for Process Weight

Unit	New Lactose Primary Dryer	New Lactose Fluidized Bed Dryer	New Lactose Mill Receiving Baghouse	Lactose Powder Bins	Lactose Surge Hoppers	WPC Surge Hopper	WPC Nuisance Baghouse
Process Weight (lb/hr)	750	525	750	11,500	17,600	13,200	10
PM Emission Rate (lb/hr)	0.08	0.05	0.08	1.15	1.76	0.03	0.11
Compliance with Allowable Emission Calculation							
Calculated Allowable Emissions (E) (lb/hr) [1]	2.39	1.93	2.39	11.39	12.67	11.79	1.96
Compliance w/ PM Loading Standard	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

[1] **General Restrictions - New Equipment:**
If PW is less than 9,250 pounds per hour
$E = 0.045(PW)^{0.6}$
If PW is greater than 9,250 pounds per hour
$E = 1.10(PW)^{0.25}$

Appendix D

Air Dispersion Modeling Protocol/IDEQ Approval Letter

Air Dispersion Modeling Protocol for Glanbia Foods, Inc.

PTC Application Mod

Gooding, Idaho

Prepared for:

Glanbia Foods, Inc.

Submitted to:

Idaho Department of Environmental Quality

January 2008

Prepared By:

CH2MHILL

Project Background

Glanbia Foods, Inc. proposes to modify their cheese and whey facility in Gooding, Idaho, by upgrading the lactose production line with new process equipment and installing a new WPC bagging line. An air quality impact analysis will be performed in support of a Permit to Construct (PTC) required under IDAPA 58.01.01.200. Idaho regulation requires the facility applying for a PTC to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). A TAPs analysis is not required for the permit modification.

This air dispersion modeling protocol is being submitted to the Idaho Department of Environmental Quality (IDEQ) for the Glanbia Foods cheese and whey facility. This document summarizes the modeling methodology that will be used to evaluate the facility's impacts to air quality with respect to particulate matter (PM) emissions. It has been prepared based on the U.S. Environmental Protection Agency (EPA) *Guidelines on Air Quality Models* (GAQM), and the *State of Idaho Air Quality Modeling Guideline* (ID AQ-01, December 31, 2002).

Project Description

There are seven new emission points proposed with the upgrade of the lactose production line and new WPC bagging line:

- **Drying Process –** (1) A new primary dryer will replace the current delumper. The primary dryer will be steam heated. The primary dryer will contain a new baghouse system to replace the existing scrubber. (2)A secondary fluidized bed dryer will replace the existing dryer. The fluidized bed dryer will also be steam heated. The fluidized bed utilizes a baghouse for product recovery.

- **Milling Process** – (3) Lactose product recovered from the drying process is directed to a receiving baghouse. The lactose product recovered from the receiving baghouse is either routed to the existing Bauermeister Mill or a new Powder Mill.

- **Powder Handling –** (4) The two existing lactose powder bins will no longer exhaust into the facility but will be reconfigured to exhaust to the atmosphere with the addition of one new powder bin. Therefore, one stack will be configured to combine the exhaust streams of three lactose powder bins. (5) The two existing surge hoppers will no longer exhaust into the facility but will be reconfigured to exhaust to the atmosphere. Therefore, one stack will be configured to combine the exhaust streams of two existing surge hoppers.

- **WPC Bagging Line (2 emission points) –** A new WPC bagging line is proposed to handle the WPC bulk storage from the existing WPC filling station. This will involve two new emission points. (6) A new WPC surge hopper will vent to the atmosphere; and (7) a new nuisance baghouse on the end of the WPC bagging line.

Emissions

Stack Information

Stack release parameters for the sources resulting in a PM net emissions increase are identified in Table 1 for the preliminary modeling analysis. A facility layout showing the location of buildings and emissions sources will be included with the application. Stack parameters are derived from manufacturer specifications (NIRO and RELCO). Manufacturer specifications will be included with the submittal of the permit modification application. Note that the information provided herein is based on preliminary design information, and may be updated in the permit application.

Table 1
Stack Parameters

Stack Name	Stack ID	Stack Height (ft)	Diameter (in)	Flow Rate (scfm)	Temperature (F)	Notes
Primary Dryer_Bag	PDRYER_BAG	89	34	15143	205	
Fluidized Bed Dryer_Bag	FBD_BAG	89	30	12018	163	
Mill Receiving_Bag	MREC_BAG	48	6	440	95	Horizontal discharge (use 0.001 m/s)
Powder Bin_Bag	PBIN_BAG	88	8	880	95	
Lac Surge Hop _Bag	LSHOP _ BAG	43	6	440	95	Horizontal discharge (use 0.001 m/s)
WPC Surge Hop _Bag	WPCSHOP _BAG	28	8	780	72	Horizontal discharge (use 0.001 m/s)
WPC Nuisance _Bag	WPCNUIS _BAG	19	10	3000	72	Horizontal discharge (use 0.001 m/s
Existing Scrubber	LAC SCRUB	85	44	38000	135	

[1] Building Roof Height is 82 ft from ground surface

Estimated Emissions

A preliminary estimate of the net emission increase for each source that will be modeled is included in Table 2.0. PM_{10} is the only criteria pollutant impacted by the production increase. Note that the lactose scrubber will be removed as a result of the lactose line equipment upgrade. Therefore, the lactose scrubber will be modeled with negative PM emission values.

Table 2
PM_{10} Net Emissions Increase

Stack Name	Stack ID	PM_{10} (lb/hr)	PM_{10} (ton/yr
Primary Dryer_Bag	PDRYER_BAG	0.08	0.33
Fluidized Bed Dryer_Bag	FBD_BAG	0.05	0.23
Mill Receiving_Bag	MREC_BAG	0.08	0.33
Powder Bin_Bag	PBIN_BAG	1.15	5.04
Lac Surge Hop _Bag	LSHOP_BAG	1.76	7.71
WPC Surge Hop _Bag	WPCSHOP_BAG	0.03	0.13
WPC Nuisance _Bag	WPCNUIS_BAG	0.11	0.5
Lactose Scrubber	SCRUB	(5.05)	(22.09)

Methodology

Standards and Criteria Levels

Table 3 summarizes applicable criteria including:
- Significant contribution levels (SCL),
- National Ambient Air Quality Standards (NAAQS).

Table 3. Regulatory Standards and Significance Levels

Pollutant	Averaging	NAAQS		SCL
	Period	μg/m³	ppm	(μg/m³)
PM_{10}	Annual	50		1
	24-Hour	150	--	5

Modeled concentrations will be compared to the applicable Idaho significant contribution levels (SCL) shown in Table 3. If the predicted impacts are not significant (that is, less than the SCL), the modeling is complete for that pollutant under that averaging time. If impacts are significant, a more refined analysis will be conducted for demonstration of compliance with the NAAQS. If a more refined analysis is required, emission sources in Table 2 will be included along with facility-wide emission sources provided in Table 4.

Table 4
PM_{10} Facility-Wide Sources

Stack Name	Stack ID	PM_{10} (lb/hr)	PM_{10} (ton/yr
Boiler 1 (29.35)–NG	BOILER 1	0.19	0.83
Boiler 2 (Dual 25.1)-NG	BOILER 2	0.18	0.69
Boiler 2 (Dual 25.1)-Diesel	BOIL2D	0.59	0.32
Boiler 3 (Dual 25.1)-NG	BOILER 3	0.18	0.69
Boiler 3 (Dual 25.1)-Diesel	BOIL3D	0.59	0.32
Boiler 4 (25.1)-NG	BOILER 4	0.18	0.79
Boiler 5 (Biogas)	BOILER 5	0.12	0.51
Flare	FLARE	0.09	0.37
WPC Dryer	DRYER1	0.07	0.29
Generator	GEN1	0.57	0.06
Heater 1 (1.5)	HEAT1	0.01	0.05
Heater 2 (5.89)	HEAT2	0.04	0.19
Heater 3 ((1.374)	HEAT3	0.01	0.04
Lactose Rec Baghouse	LACBAG	0.76	3.34

A description of the modeling methodology is presented below.

Dispersion Model

The EPA-approved AERMOD (Version 07026) model will be used. AERMOD is a steady-state plume model that simulates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. This model is recommended for short range (< 50 km) dispersion from the source. The model incorporates the ISC Prime algorithm for modeling building downwash, which was developed to address deficiencies in the downwash algorithm previously used in the ISC model. AERMOD is designed to accept input data prepared by two specific pre-processor programs, AERMET and AERMAP. IDEQ adopted the federal mandate requiring the use of the AERMOD dispersion model for permit applications on November 9, 2006. AERMOD will be run with the following options.

- Regulatory default options,
- Direction-specific building downwash,
- Actual receptor elevations and hill height scales,
- Complex/intermediate terrain algorithms.

Building Downwash

Building influences on stacks are considered by incorporating the updated EPA Building Profile Input Program [BPIP-Prime]. The stack heights used in the dispersion modeling will be the actual stack height or Good Engineering Practice (GEP) stack height, whichever is less.

Meteorological Data

AERMET modeling files for Mini Cassia, Idaho will be used for the Gooding facility as discussed per our preliminary meeting with IDEQ on January 11, 2008. Any specific site characteristics when processing AERMET for this area will be provided by IDEQ.

AERMET accepts National Weather Service (NWS) 1-hour surface observations, NWS twice-daily upper air soundings, and data from an on-site meteorological measurement system. These data are processed in three steps. The first step extracts data from the archive data files and performs various quality assessment checks. The second step merges all available data (both NWS and on-site). These merged data are stored together in a single file. The third step reads the merged meteorological data and estimates the boundary layer parameters needed by AERMOD. AERMET writes two files for input to AERMOD: a file of hourly boundary layer parameter estimates and a file of multiple-level (when the data are available) observations of wind speed and direction, temperature, and standard deviation of the fluctuating components of the wind direction.

For PM_{10} modeling, a combined data file for all five years will be used according to IDEQ request.

Ambient Conditions

Background concentrations for this facility will be provided by IDEQ. The completed Table 5 will be included with the final report.

Table 5. Background Criteria Pollutant Concentrations (μg/m³)

Pollutant	24-hr	Annual
PM_{10}		

Receptors

The ambient air boundary will be defined by the fence line on the south side of the plant, the Little Wood River to the east and the property boundary on the remainder of the perimeter. The non-fenced areas will be delineated with "No Trespassing" signs to limit public access to these areas. The selection of receptors in AERMOD will be as follows:

- The first run will be a 500-meter coarse grid with a nested Cartesian grid of 100 meter-spaced receptors as follows:
  - The 100-meter grid will extend approximately 1 km around the facility.
  - The 500-meter grid will extend approximately 5 km,
  - Receptors will be placed at 25-meter intervals around the fenceline.

- A second run using a fine receptor grid will be centered on the point of maximum impact and re run using a 50 meter grid spacing, unless the initial maximum occurs on the fenceline.
- Receptor elevations will be calculated by AERMAP as described below.

AERMAP will be run to process terrain elevation data for all sources and receptors using 7.5 minute Digital Elevation Model (DEM) files prepared by the USGS. AERMAP first determines the base elevation at each source and receptor. For complex terrain situations, AERMOD captures the physics of dispersion and creates elevation data for the surrounding terrain identified by a parameter called hill height scale. AERMAP creates hill height scale by searching for the terrain height and location that has the greatest influence on dispersion for each individual source and receptor. Both the base elevation and hill height scale data are produced for each receptor by AERMAP as a file or files which can be directly accessed by AERMOD.

Preliminary Analysis

The preliminary analysis for each pollutant will be conducted as follows:

- If the predicted impacts are not significant (that is, less than the SCL) for each criteria pollutant, the modeling is complete for that pollutant under that averaging time.
- If impacts are significant, a more refined analysis, as described below, will be conducted.

Refined Analyses – Criteria Pollutants

- Comparison to the Ambient Air Quality Standards
  - For pollutants with concentrations greater than the SCLs, the maximum concentration will be determined and compared to the NAAQS. This maximum concentration will include contributions from the facility, nearby sources, and ambient background concentrations. Background concentrations to be provided by IDEQ will be used to determine concentrations.
  - IDEQ will be contacted to identify nearby sources, if any, that need to be included in the analysis.

Output - Presentation of Results

The results of the air dispersion modeling analyses will be presented as follows:

- A description of modeling methodologies and input data,
- A summary of the results in tabular and, where appropriate, graphical form,
- Modeling files used by AERMOD will be provided with the application on compact disk,
- Any deviations from the methodology proposed in this protocol will be presented.

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 NORTH HILTON, BOISE, ID 83706 · (208) 373-0502

C. L. "BUTCH" OTTER, GOVERNOR
TONI HARDESTY, DIRECTOR

January 30, 2008

Rick McCormick, P.E
CH2M HILL
Boise, Idaho

RE: Modeling Protocol for Modifications to the Glanbia Foods, Inc. Facility Located in Gooding, Idaho

Rick:

DEQ received your dispersion modeling protocol on January 22, 2008. The modeling protocol was submitted on behalf of Glanbia Foods, Inc. (Glanbia). The modeling protocol proposes methods and data for use in the ambient impact analyses of a Permit to Construct application for modifications to Glanbia's cheese and whey facility in Gooding, Idaho.

The modeling protocol has been reviewed and DEQ has the following comments:

- Comment 1: Stack Parameters. The application should provide documentation and justification for stack parameters used in the modeling analyses, clearly stating what temperature and flow rates values are based on (combustion evaluation calculations, fan curves, direct measurement, etc.) and showing how values were estimated. In most instances, applicants should use typical parameters, not maximum temperatures and flow rates. If stack parameters for a specific source may vary considerably, additional modeling scenarios should be performed to assess the affect on ambient concentrations, especially if modeled impacts are fairly close to applicable standards.

  The protocol listed flow rates in scfm. Flow rates as acfm must be used in the modeling. Also, typical rates rather than maximum design rates should be used.

- Comment 2: Receptor Grid. The proposed receptor grid appears reasonable. However, it is the applicant's responsibility to use a sufficiently dense receptor network such that the maximum modeled concentration is reasonably resolved. If modeled concentrations are near regulatory thresholds (significant contribution level or NAAQS), it may be necessary to use a denser receptor grid to adequately resolve the maximum concentration. Given the close proximity of emissions sources to the ambient air boundary, it may be advisable to extend the 25-meter grid out to about 50 meters to ensure the maximum concentration is captured. If DEQ conducts verification modeling analyses with a tighter receptor grid and compliance with standards is no longer demonstrated, the permit will be denied.

- Comment 3: Background Concentrations. Background concentrations must be added to modeling results if maximum modeled concentrations exceed significant contribution levels. Limited PM10 monitoring data are available for the area around Gooding. DEQ recommends using default rural/agricultural background values. The following are DEQ default background concentrations for rural/agricultural areas:

  PM10 – 24-hour = 73 μg/m^3; annual = 26 μg/m^3
  CO – 1-hour = 3,600 μg/m^3; 8-hour = 2,300 μg/m^3
  SO2 – 3-hour = 34 μg/m^3; 24-hour = 26 μg/m^3; annual = 8 μg/m^3
  NO2 – annual = 17 μg/m^3
  Pb – quarterly = 0.03 μg/m^3

- Comment 4: Meteorological Data

  Model ready meteorological data was provided by DEQ. The surface data were obtained from a station in Minidoka, which is about 60 miles east of Gooding. Because of the distance separating the meteorological station from the application site, there is decrease confidence in the representativeness of the data to the site. Therefore, DEQ requests that maximum 1st highest concentrations be used as design values in the full impact analyses for short-term averaging periods, with the maximum 2nd highest concentrations used for PM10 when using a concatenated five-year data set.

DEQ's modeling staff considers the submitted dispersion modeling protocol, with resolution of the additional items noted above, to be approved. It should be noted, however, that the approval of this modeling protocol is not meant to imply approval of a completed dispersion modeling analysis. Please refer to the *State of Idaho Air Quality Modeling Guideline*, which is available on the Internet at http://www.deq.state.id.us/air/permits_forms/permitting/modeling_guideline.pdf, for further guidance.

To ensure a complete and timely review of the final analysis, our modeling staff requests that electronic copies of all modeling input and output files (including BPIP and AERMAP input and output files) are submitted with an analysis report. If DEQ provided model-ready meteorological data files, then these do not need to be resubmitted to DEQ with the application. If you have any further questions or comments, please contact me at (208) 373-0112.

Sincerely,

Kevin Schilling

Kevin Schilling
Stationary Source Air Modeling Coordinator
Idaho Department of Environmental Quality
208 373-0112

Appendix E
Manufacturer Information

Glanbia Foods, Inc.
Lactose Line Equipment Upgrade and New WPC Bagging Line
Equipment Parameters

Stack Name	Manufacturer	In Service	Stack ID	Bldg Elev. (ft)	Exit Stack Height (ft)	Exit Stack Dia. (inches)	Ave. Flow Rate (scfm)	Ave. Flow Rate (acfm)	Temp (F)	2008 Dry Solids Output (lb/hr)	Baghouse Efficiency (%)	Grain Loading ($grain/ft^3$)	Notes
Drying Process: Primary Dryer _Baghouse	NIRO (Bay Area Filtration)	2008	PDRYER_BAG	82	89.0	34	15143	18752.50	205	750	99.99		Steam heated dryer
Drying Process: Fluidized Bed Dryer_ Baghouse	NIRO (Bay Area Filtration)	2008	FBDRYER_BAG	82	89.0	30	12018	13942.67	163	525	99.99		Steam heated dryer
Milling Process: Mill _Receiving Baghouse	NIRO (Bay Area Filtration)	2008	MILL_RECBAG	82	48	6			95	750	99.99		Horizontal Discharge (use default 0.001 m/s)
Powder Handling: Powder Bin_Baghouse (3 combined)	NIRO (Bay Area Filtration)	2008	POWDER BIN	82	88	8	880	909.50	95	11,500	99.99		
Powder Handling: Surge Hopper_Baghouse (2 combined)	NIRO (Bay Area Filtration)	2008	SURGE HOP	82	43	6			95	17,600	99.99		Horizontal Discharge (use default 0.001 m/s)
WBC Bagging Line: WPC Surge Hopper_Baghouse	Donaldson (Bay Area Filtration)	2008	WPC SURGE HOP	82	28	8			72	13,200		0.0044	Horizontal Discharge (use default 0.001 m/s)
WBC Bagging Line: WPC Nuisance Baghouse	Donaldson (Bay Area Filtration)	2008	WPC NUIS BAG	82	19	10			72	10		0.0044	Horizontal Discharge (use default 0.001 m/s)

Notes:

ACFM conversion: SCFM*(Temp+460)/(77 F+460)
Primary Dryer calc: 15143*(205+460)/(77+460) = 18752.5 acfm

LMS Technologies, Inc.

6423 Cecilia Circle, Bloomington, MN 55439

(612) 918-9060, Fax: (612) 918-9061

Date :	June 27, 2005	Requested By:	
Test ID:	16M.D.	Bay Area Filtration	
Test Type :	Fractional Efficiency	Size :	12 x 12
Test Aerosol :	KCL, Neutralized	Velocity :	10fpm

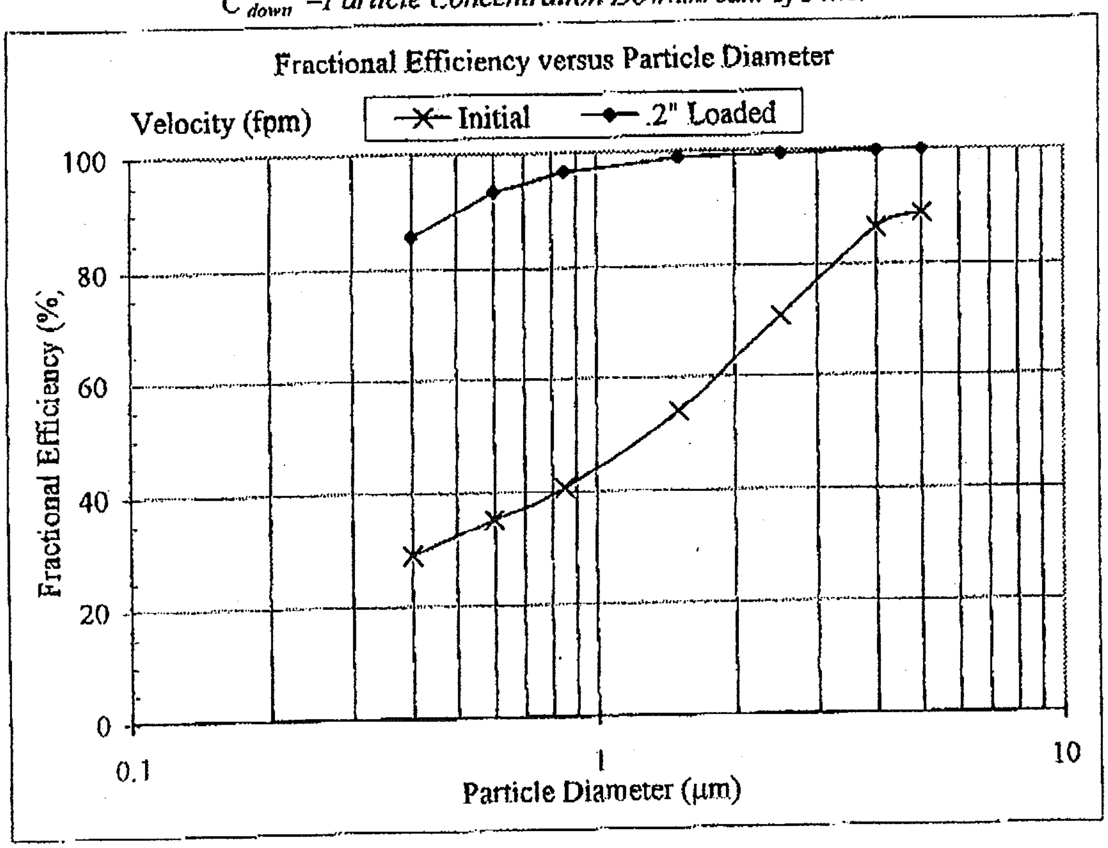
Status	Initial	.2" Loaded
Δp (" H_2O)	0.148	0.348
Size Range (μm)	Fractional Efficiency (%)	
0.3-0.5	29.2	85.6
0.5-0.7	35.4	93.5
0.7-1.0	40.7	96.7
1.0-2.0	53.9	98.9
2.0-3.0	70.8	99.5
3.0-5.0	86.4	99.9
>5.0	89.0	100.0

$$\boxed{F_{eff} = \frac{C_{up} - C_{down}}{C_{up}} x100\%}$$

F_{eff} = *Fractional Efficiency*

C_{up} = *Particle Concentration Upstream of Filter*

C_{down} =*Particle Concentration Downstream of Filter*



TEST SUPERVISOR
MICK FLOM

ENGINEERING APPROVAL
K.C.KWOK, PH.D.

McCormick, Rick/BOI

To: Hughes, Todd

Subject: RE: Air Permit Questions

From: jcb@niroinc.com [mailto:jcb@niroinc.com]
Sent: Monday, January 14, 2008 11:51 AM
To: Hughes, Todd
Cc: Boytim, Mark; McCormick, Rick/BOI
Subject: Re: Air Permit Questions

Hi Todd,

It is .0044 for both.

Regards

Jon Bloch
Sales Manager
GEA Powder Systems
1600 O' Keefe Road
Hudson, WI. 54016

(715) 386-9371 Phone
(715) 386-9376 Fax

"Hughes, Todd" <TJHughes@glanbiausa.com>

"Hughes, Todd"
<TJHughes@glanbiausa.com>

01/14/2008 12:43 PM

To<jcb@niroinc.com>
cc"Boytim, Mark" <MBOYTIM@glanbiausa.com>, <Rick.McCormick@CH2M.com>
SubjectAir Permit Questions

Jon,

You sent some grain loading information for the baghouse on the surge hopper as well as for the nuisance baghouse. You used a grain loading value of 0.0044 grains/ft3 on the emission spreadsheet you sent for both baghouses. However, the letter from Donaldson (which I am assuming is for the nuisance baghouse) states that the filters will not exceed 0.002 grains/ft3. Is it 0.002 for the nuisance baghouse and 0.0044 for the surge hopper baghouse? Or is it 0.0044 for both? Thanks

Todd J. Hughes
Environmental Manager
Glanbia Foods Inc.
Phone: 208-934-9835
Fax: 208-934-9442
Cell: 208-316-0723

Bin Vent Emissions (@ mg/m3 of air - Ref Filtercorp email 11/27/06)	10	mg/m3
Dust Collector Emissions (Ref Donaldson statement rec'd 11/28/06, and email to Pearson Arnold's Rusty Kocon 11/30/06)	0.0044	grain/ft3
	10.06101759	mg/m3

1 grain =	64.79891	mg

System	Blower air in				Emissions			
1	780	cfm	1326	m3/hr	0.02917743	lb/hr		
Total for Surge Hopper Bin Vent					**0.02917743**	**lb/hr**	**0.700258267**	**lb/day**
3 (50 lb)	Directed to Packaging Nuisance Dust Collector							
Packaging Dust Collector	3000	cfm	5101	m3/hr	0.11290562	lb/hr		
Total for Packaging Dust Collector					**0.11290562**	**lb/hr**	**2.709734899**	**lb/day**

McCormick, Rick/BOI

To: Hughes, Todd
Subject: RE:

From: Kevin Hemish [mailto:khemish@relco.net]
Sent: Monday, December 24, 2007 7:24 AM
To: Hughes, Todd
Cc: Pettinger, Doug; Boytim, Mark; Rick.McCormick@CH2M.com; Roger Ochsner
Subject: RE:

Hello Todd,

My answers are in red below. Hope this clears things up.

Kind Regards,

Kevin Hemish
Project Engineer
RELCO
Phone:320-231-2210
Fax:320-231-2282
mailto:khemish@relco.net

From: Hughes, Todd [mailto:TJHughes@glanbiausa.com]
Sent: Friday, December 21, 2007 4:07 PM
To: Kevin Hemish
Cc: Pettinger, Doug; Boytim, Mark; Rick.McCormick@CH2M.com
Subject:

Kevin,

I need some answers to the questions below and/or confirmation of the information. The information I have provided comes from information you provided me through past communications and I want to ensure I understand completely. Thanks.

1. Feed Rate out of Primary Dryer into the Baghouse collector 1 = 750 lbs/hr Yes, this the anticipated dust loading.

2. Feed Rate out of Fluidized Bed (Secondary) Dryer into the Baghouse collector 2 = 525 lbs/hr Yes, this is the anticipated dust loading.

3. Feed Rate from the drying process into the new Milling Receiving Baghouse = 750 lbs/hr Yes, this is the anticipated dust loading

4. Feed Rate from the New Powder Mill into the Bins = see below

5. Feed Rate from the Bauermiester Mill into the Bins (even though this is existing equipment, you are increasing throughput) = see below

You've sent me an e-mail indicating that the feed rate to the bins is 11,500 lbs/hr. Is this a total feed rate to all three at once? Since you've told me that only 2 fans can run at once, is that the total feed rate into two bins at once? Or is that a feed rate into one bin at a time? If so, can two bins be fed at the same time at 11,500 lbs/hr? OK, the total output of the dryer system is 11,500 pph; there can be any combination of using the Bauermiester and new mill; but the TOTAL of the two milling systems will not be greater than 11,500 pph. The Bauermiester mill does NOT have any anticipated rate increase. There are only two mills, therefore you can only go into two storage bins simultaneously, or, if required, the new mill can take all 11,500 pph and the Bauermiester would not be running. The Bauesmiester can not fine grind 11,500 pph.

6. Feed Rate from Lactose Bins to the two surge hoppers = see below

You sent an email in response to this question before as: (Bulk feed is approximately 17,600 PPH / 25 kg bag is approximately 16,550 per discussions with Glanbia) I don't understand this. Can you explain it to me? Can they both be fed at the same time? If so, does this feed rate apply to both independently or both at the same time in total? You can only run one of the bagging lines continuously; however, there is possibility that you could fill the surge hopper for the 25 kg bagging, and then switch over to run the bulk bag line, this means that for a **short** period both bagging lines will be running. The scenario I gave to you would be worst case.

7. Feed Rate from the lactose surge hoppers through the lactose bagging line = Now that there has been an increase, what are we feeding it and what is the loading to the nuisance baghouse now? The feed rate to both the bulk and 25 kg lines remain unchanged. Both lines can package at a rate greater than the throughput of the dryer.

8. Feed Rate from the WPC bins to the new Surge hopper = ? Unfortunately, we cannot answer that, I would suggest giving Jon Bloch at Niro a call, I'm sure he has the information you require.

I know the the new bagging line from here on out are a Niro issue. I still need the model numbers and specification sheets on all the new equipment you plan to install. Everything from (and including) the new primary dryer on. I still need the rated efficiencies of the baghouses including the specification sheets on the bags themselves. Since you wouldn't share the calculations in the emissions spreadsheet you provided, I can't back the math up to get the efficiency numbers I want. I will have to provide the manufacturer information to DEQ to backup the efficiencies we use or they won't buy them. I've been down that road with them before. Please work on getting this information together and to me as soon as possible. There really isn't any time to waste in this process. Thank you. See attached bag data. As far as model numbers go, we do have any, we specialty build the equipment to the process. The mill info is as follows: Rigimill model number 2442.

Todd, I hope that this has answered your questions. Please drop me a line if there is anything else I can do.

Todd J. Hughes
Environmental Manager
Glanbia Foods Inc.
Phone: 208-934-9835
Fax: 208-934-9442
Cell: 208-316-0723

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Todd, I hope that this has answered your questions. Please drop me a line if there is anything else I can do.

Todd J. Hughes
Environmental Manager
Glanbia Foods Inc.
Phone: 208-934-9835
Fax: 208-934-9442
Cell: 208-316-0723

McCormick, Rick/BOI

To: Hughes, Todd

Subject: RE: WPC Line Emission Points

From: mgr@niroinc.com [mailto:mgr@niroinc.com]
Sent: Wednesday, January 09, 2008 8:42 AM
To: Hughes, Todd
Cc: jcb@niroinc.com
Subject: Fw: WPC Line Emission Points

Hello Todd,

I am one of the process engineers here in Hudson. Jon Bloch asked me to look this over before it is sent to you. I have and it looks OK. As Jon states if you have any questions contact him or myself.

Best Regards,

Mark Roisum
Process Engineer
Niro Inc.

Jon,

Thank you for the information. It's helpful, although I need the information below exactly how I have requested it. Perhaps someone is working on providing this information and I just don't know it, but I need to reiterate what it is I need. For both the new WPC surge hopper and new nuisance baghouse, I need the following information:

Building Elevation of the emission point
There will be two individual exhaust emissions points through the wall of the new building. One will be for the exhaust from the bin vent assembly located on top of the new Avapac surge hopper above the filler itself. The second emissions exhaust point will be from the Nuisance dust collector assembly fan located in the new palletizer location.

Exit Stack Height
Surge hopper emissions elevation height will be approx. 28'-0" from the floor level. The ducting will run horizontally to the outside wall of the new packaging building.
Nuisance dust collector emissions elevation height will be approx. 19'-0" from the floor level. The ducting will run horizontally to the outside wall of the new packaging building.

Exit Stack Diameter
Surge Hopper Bin Vent duct size 8" Diam.
Nuisance Dust Collector duct size 10" Diam.

Flow Rate (scfm)
780 CFM exhaust fan for Surge Hopper
3000 CFM Exhaust fan for Nuisance dust Collector

Flow Rate (acfm)

Exit Gas temperature
72 Deg. F

'he new estimated solids throughput through the surge hopper and the amount of powder to be bagged

3,200 lbs. / hr..

iaghouse Efficiency of the small baghouse that will be on the surge hopper and the efficiency of the nuisance baghouse.

urge Hopper Bin Vent Assembly efficiency =
'uisance Dust Collector Assembly efficiency = 99.96+%

iome of these details may be in thespreadsheet you sent, but it would be easier to just provide me the details as I have asked. I need
ɔ know how much dry solids is going into the WPC surge hopper and how much is going into the WPC nuisance baghouse.

.pprox. 13,200 lbs. / hr. WPC Powder into Surge Hopper

)291 lbs. / hr. WPC powder emission's from the surge hopper

.pprox. 10 lbs. / hr. of WPC powder to the Nuisance Dust Collector
1129 lbs. / hr. WPC powder emission's from the Nuisance Dust Collector

Todd Hughes

'he new estimated solids throughput through the surge hopper and the amount of powder to be bagged

3,200 lbs. / hr..

Baghouse Efficiency of the small baghouse that will be on the surge hopper and the efficiency of the nuisance baghouse.
;urge Hopper Bin Vent Assembly efficiency =
luisance Dust Collector Assembly efficiency = 99.96+%

Some of these details may be in thespreadsheet you sent, but it would be easier to just provide me the details as I have asked. I need o know how much dry solids is going into the WPC surge hopper and how much is going into the WPC nuisance baghouse.

\pprox. 13.200 lbs. / hr. WPC Powder into Surge Hopper

0291 lbs. / hr. WPC powder emission's from the surge hopper

\pprox. 10 lbs. / hr. of WPC powder to the Nuisance Dust Collector
1129 lbs. / hr. WPC powder emission's from the Nuisance Dust Collector

Todd Hughes

Appendix F

Modeling Results

Appendix F. Modeling Results for Glanbia Foods, Inc. (units ug/m3)

Pollutant	Averaging Period	Background	Modeled Conc.	Overall Modeled Conc.	Criteria	Below Criteria	Year	Location
Criteria Pollutants								
PM_{10}	24-HR*,**	73	73.15	146.15	150	Yes	5-yr	North fenceline
	ANNUAL**	26	11.4	37.4	50	Yes	5-yr	North fenceline

Notes:

*The 24-Hour PM10 concentration is for the 2nd High

** The 24 HR PM10, and Annual PM10 concentration used a combined 5 year meteorological data file.